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August 28, 2015

Ken Novak
MMGL Corporation
3200 NW Yeon Ave.
Portland, OR 97210

RE: Basis of Design Report – Groundwater Source Control measure
Premier Edible Oils Site, ECSI #2013

Dear Mr. Novak:

The Oregon Department of Environmental Quality (DEQ) has reviewed the *Basis of Design Report - Groundwater Source Control Measure*, dated July 2015, for the Premier Edible Oil (PEO) site located at 10400 N. Burgard Way, Portland, Oregon. The report serves to satisfy the scope of work identified in the Voluntary Cleanup Agreement (ECDVC-NWR-01-06) dated March 6, 2001, between DEQ and MMGL Corporation, to implement an upland remedial investigation (RI)/feasibility study (FS) and source control measures (SCMs). Historical petroleum releases resulted in the presence of LNAPL in soil and groundwater, while also inducing geochemical conditions that have dissolved and mobilized naturally-occurring metals, primarily arsenic and manganese, into groundwater.

MMGL is proposing a groundwater barrier wall (GWBW) to prevent the migration of LNAPL, and unacceptable levels of dissolved petroleum and metals in groundwater to the Willamette River. Design plans for an accompanying oxygenation system will be presented under separate submittals, in addition to a performance monitoring plan to assess whether the groundwater SCM as-built is effective in achieving DEQ remedial action objectives (RAOs) for source control. The United States Environmental Protection Agency (EPA) has also established RAOs for the Portland Harbor Superfund Site which are applicable to the PEO property. Constituents of concern (COCs) at PEO requiring source control include total petroleum hydrocarbons in the gasoline range (TPH-g); benzene, toluene, ethylbenzene and xylene (BTEX); and arsenic (As) and manganese (Mn). Please note, EPA has included a groundwater preliminary remediation goal (PRG) for C10-C12 aliphatic in their current draft FS, and that DEQ has recommended additional fractions in both the TPH gasoline and diesel ranges.

DEQ has the following comments on the Basis Design Report regarding the proposed GWBW.

General Comments

1. Provide a simple communication plan or some other documentation to clarify lines of communication and contact information during work. Include who DEQ should address about making field corrections and/or stopping work if we observe activities not conducted as agreed. In addition, DEQ requests a weekly construction update covering activities (Monday-Friday) and weekly onsite meetings with DEQ during construction of the SCM.

2. A great deal of construction detail rely on a not yet identified "Contractor" including technique, slurry mix, materials management, quality control, etc. DEQ requests submittal for review and approval these additional specifications to be determined by the Contractor prior to implementation including:

a. The Groundwater Barrier Wall Work Plan referenced in the technical specifications Division 2 – Site Work 1.09 (C) Submittals, page 02242-8.

b. Work plans also referenced in Site Work 1.05 (A) Submittals, page 02200-3 for excavation, separation of materials, construction of slurry pond, staging, etc.

c. The Construction Quality Assurance/ Quality Control (CQA/QC) referenced (e.g. 01010-4 and 02242-1). If different than the CQA/QC, also provide the final Quality Control Plan referenced in Site Work 1.09 (D) Quality Control Plan, page 02242-9 for DEQ review and approval.

d. Provide copies of all Health and Safety Plans (HASPs) developed by ERM or subcontractor.

3. Project design drawings are appropriately stamped by an Oregon Professional Engineer (Brendan Robinson, P.E.). Interpretations provided regarding the geotechnical/slope stability analysis performed and recommended setback for the "slurry-based" barrier wall presented in the memorandum, *Groundwater Barrier Wall Conceptual Design and Setback*, dated May 4, 2015, also requires endorsement by an Oregon Professional Engineer. Enclose this technical memorandum as an appendix to the Final (100%) Design document.

Specific Comments

Section 1.1.1, Site History. This section suggests a potential oxygenation system but the remainder of the report states designs plans will be provided in the future with the performance monitoring plan. Please clarify your intentions related to oxygenation in conjunction with the GWBW. While the barrier wall should increase travel time of impacted groundwater to the river, if aquifer geochemistry does not shift from primarily reducing to oxidizing conditions metals may persist in the dissolved phase. Therefore, DEQ supports the introduction of oxygen in the LNAPL area to promote redox conditions favorable to degrade and/or stabilize COCs in groundwater.

Section 2.2.1, Site Soils. The stratigraphic profile shown in Appendix A, Sheet 5, is general and shows no heterogeneity. In the following paragraph, expand upon how native soils will be considered within construction and slurry mixing activities.

Section 2.2.2, Extent of Groundwater Impacts. Speak to the purpose of transition zone water (TZW) sampling related to the project and results. It would also be helpful to show extent of As and Mn in groundwater above acceptable levels relative to placement of the GWBW and oxygenation system.

Section 2.3, Groundwater Source Control Measure Summary. The purpose of the GWBW is to prevent migration of LNAPL and dissolved phased TPH to the river by the means of increasing travel time of impacted groundwater. Expand on this concept and other design objectives, such as diminished contribution to the "stranded wedge" and improved overall water quality.

Section 2.4.2, Construction Technique. Various slurry wall construction options and their effect on the wall alignment are presented in the Conceptual Design memorandum. Is there a preferred/expected technique to present? The chosen method should be described in sufficient detail and communicated to DEQ prior to construction.

Section 2.4.3, Backfill Mix Design.

a. Summarize requirements for hydraulic conductivity *in-situ* or reference technical specifications.

b. Provide detail on the mix process. Is it anticipated that a slurry pond will be needed?

c. Provide slurry compatibility and mix design testing results (Treatability Study Report) in the Final Design or construction completion report.

Section 2.4.4, Wall Alignment. As noted above, please include the Conceptual Design document in the Final Design.

Section 2.4.5, Wall length and Depth. DEQ has been provided a basic summary of preliminary groundwater modeling and it was anticipated that further detail would be provided in the design report. Discuss modeling performed to evaluate predicted travel times for a given wall depth and how this played into the wall depth proposed. Also provide details on wall thickness and basis.

Section 3.0, Groundwater Barrier Wall Construction Permitting. DEQ does have the authority during a cleanup action to waive administrative requirements related to state and local government permits; however, as noted substantive requirements must be satisfied. For the project identify all permits you are considering not obtaining and work with DEQ to ensure substantive requirements are met.

Section 3.2, Local. Describe the City's substantive requirements and how PEO plans to fulfill these, such as plans for future plantings (e.g. habitat considerations and vegetation restoration).

Section 4, Construction Management.

a. Planning emphasizes safe implementation and successful construction; however, unforeseen events can occur. Discuss additional contingency planning and response actions, specifically spills and/or stability failures related to the slurry.

b. Heavy equipment can compress soils and mobilize NAPL, potentially into adjacent waterways. DEQ recommends that MMGL have booms of sorbent material and /or other spill response equipment onsite that can be rapidly implemented and is capable of containing LNAPL releases to surface water.

c. The DEQ project manager needs to be notified in the event of a spill (Site Work 3.01 (E) General, page 02250-4). If a spill occurs above a reportable quantity which is any amount that affects surface water, Oregon Emergency Response System (1.800.452.0311) must be notified per Oregon Administrative Rules (OAR) 340-142-0040.

Section 4.2, Staging Area. The Work Area shown in Sheet 3 is considerably general. Provide additional details on staging of materials.

Section 4.3, Erosion/Sediment Control and Construction Stormwater Management. Provide a copy of the Erosion and Sediment Control Plan (ESCP) completed for the 1200-C stormwater permit with the Final Design or separate submittal. Given the nature of work and that contamination will be encountered, ESC measures should exceed typical construction projects. Also see comments below related to Sheet 4.

Section 4.4, Quality Assurance/ Quality Control Activities.

a. DEQ may request more than two locations for GWBW QA/QC testing (Site Work 2.06 (A) General, page 02242-15 and Table 02242-1).

b. Import fill material should be characterized to confirm it is "clean" and suitable for placement onsite. Results should be submitted to DEQ for review/approval prior to transport to the site.

Section 4.5, Contaminated Materials Management.

a. In general, DEQ needs to review and approve characterization of waste generated onsite and appropriate disposal location. Document protocol in the contaminated media management plan (CMMP) or separate work plan.

b. DEQ requires review/approval for stockpiling and staging plan for soils, trench spoils, and debris referenced in Site Work 1.05(B) Submittals, page 02200-4. Furthermore disposal facility considerations specified in Section 1.05 Disposal Facilities, Page 02250-3 also require DEQ approval.

c. Document protocol for management of de-watering or un-used groundwater, characterization and proper disposal. Also see comments below related to the CMMP.

Section 5.2, Groundwater Sample Collection and Analysis. The sampling and analysis plan will need to be more comprehensive than that conceptually proposed. Semi-annual and groundwater samples for the first year followed by annual samples is an insufficient program to establish base line conditions, contaminant reduction trends related treatment, temporal variability and support evaluations that the system is working or adaptive management measures need to be evaluated and implemented. It is expected that quarterly monitoring will be performed, and with DEQ approval, semi-annual sometime in the future.

Appendix A, Sheet 4/6. Show surface flow direction, proposed stockpile/staging areas, and all functional catch basins (including CB-16) and proposed controls to mitigate potential impacts from project activities.

Appendix B, CMMP.

a. Go into detail on stockpile/staging area locations.

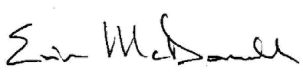
b. Page 2. The "criteria" when employing PID instrumentation to determine soil or debris is contaminated with VOCs is not stated above. Updated report to include the criteria.

c. Page 3. Elaborate on protocol for determining the number of samples collected and required testing.

A revised Basis Design Report is not required; however, the Final Design Report shall incorporate the required revisions provided above on the pre-final design report. DEQ will continue to work with PEO to determine the appropriate measures to achieve protectiveness and whether concentrations are reduced in a reasonable timeframe.

Please feel free to contact me at (503)229-6900 to discuss the project.

Sincerely,



Erin K. McDonnell, P.E.
Project Manager
Northwest Region Cleanup Program

cc: Kevin Parrett, DEQ
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Eva DeMaria, USEPA
Tom Graf, GrafCon
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